

Permeabilities of CO₂, CH₄, N₂ and N₂O in Ionic Liquids

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The high solubility of gases in ionic liquids (ILs) has been the object of extensive research during the last few years. Supported ionic liquid membranes (SILMs) stand as one of the most attractive and promising approaches for the separation of target compounds from gas streams, mainly due to the distinct advantages conferred from the use of an ionic liquid as media. Nonetheless, and despite the promising enhanced applicability of the SILMs, permeability data of CH₄, SO₂, N₂O, light hydrocarbons or even H₂S are still scarce and focused on a narrow range of ionic liquids families, therefore, determining the gases/CH₄ permeabilities is of great interest to make them feasible candidates for real applications. Using a permeability cell, permeability measurements of CO₂, CH₄, N₂ or N₂O on several highly polar ionic liquids on the (1 to 5) bar pressure range and on the (0 to 100) °C temperature range were performed and the selectivities investigated and compared to those obtained from solubility data.